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**TEACHERS' PERSONAL MODELS  
OF INSTRUCTIONAL DESIGN**

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**INTRODUCTION**

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15 Most teachers are familiar with the term “planning,” the individual means  
17 by which teachers think about and make teaching decisions, often in a  
19 cyclical manner (Yinger, 1977). Instructional design (ID), meanwhile, is a  
21 systematic process, frequently represented through linear-visual models,  
23 that prompts users to analyze, design, develop, implement, and evaluate  
25 these decisions (e.g., Dick, Carey, & Carey, 2005). In the context of a mas-  
27 ter’s level ID course, we have asked students to draw their own models of  
29 the ID process. Our pedagogical curiosity was to see how our students  
31 represented their personal process for designing instruction throughout the  
course, the sense they were making of a formal ID process that we espoused  
in the course, and their reflections on their final personal models that served  
as a culminating course project. Over 10 years of teaching ID we have had  
many teachers as students. In looking at these final models, we discovered  
that students revealed not only ID process components, which was the  
purpose of the task, but also their “views of teaching,” sometimes depicted  
in a predominant metaphor. In some models, views of teaching took pri-  
macy over any ID model component whatsoever.

This chapter summarizes our inquiry into how graphic representations  
revealed, how the students in our classes who self-identified as either pre-

35 \_\_\_\_\_  
37 **Learning from Research on Teaching: Perspective, Methodology, and Representation**  
**Advances in Research on Teaching, Volume 11, 101-134**  
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39 ISSN: 1479-3687/doi:10.1016/S1479-3687(05)11004-9

1 service or practicing teachers viewed teaching. While the three questions that  
2 organize the volume are applied to this chapter, we are particularly focused  
3 on the issue of *Who did we ask?* Our research represents a unique approach  
4 in that we prompted teachers to visualize their own ID process and explain  
5 it, rather than giving them a published model that they should follow in  
6 their own practice. The first section of this chapter provides a conceptual  
7 background of teacher knowledge and beliefs, and the unique qualities of  
8 visual representations to shed light on the experiential nature of teacher  
9 knowledge and beliefs.

10 To address the question *How did we look?* We used a process of cate-  
11 gorization and theme-building to analyze teachers' personal models of ID.  
12 The second section describes the methodology we developed to analyze  
13 teachers' personal models of ID. In terms of answering the question *How did*  
14 *we show what we saw?* We initially looked at how teachers represented the  
15 ID process, but our inquiry shifted to how teachers viewed teaching and the  
16 emergent categories of these views. The third section reports the results of  
17 our analysis reporting categories of model types and "views of teaching."  
18 We conclude the chapter with a reflective section that addresses the issues  
19 common to all of the chapters in this volume.

21

## 22 THE TEACHERS' PERSPECTIVE

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24 We asked teachers to represent ID in their own models, rather than ac-  
25 cepting our representation or the representations by published authors. This  
26 pedagogical decision implies a perspective on how teachers develop knowl-  
27 edge about teaching. In this section, we examine three perspectives on  
28 knowledge and teaching. Next, we summarize how visuals have contributed  
29 to teacher knowledge; specifically, models, images, and metaphors. Then,  
30 we make a case for connecting ID to teaching, which answers a hidden but  
31 important question: Why teach ID in the first place?

33

### 34 *Teachers' Knowledge*

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36 There is no agreement of what teacher knowledge is and how it develops.  
37 Researchers have characterized teacher knowledge and provided organizing  
38 frameworks in a number of ways (for a review see Cochran-Smith & Lytle,  
39 1999a; Munby, Russell, & Martin, 2001). These perspectives frequently dif-  
fer based on the role of researchers and teachers in "who is asking?" and

1 “who is being asked?” We use the three contrasting relationships posed by  
Cochran-Smith and Lytle (1999a) as a means to illustrate that educators  
3 frequently talk about teachers, teaching, and teacher learning in very dif-  
ferent ways. Our inquiry, too, can be better appreciated, understood, and  
5 critiqued by discussing these different perspectives.

The three contrasting relationships of knowledge and practice are labeled  
7 by Cochran-Smith and Lytle (1999a) as *knowledge-for-practice*, *knowledge-*  
*in-practice*, and *knowledge-of-practice*. Each knowledge–practice relation-  
9 ship is categorized in terms of images; namely, images of knowledge; images  
of teachers, teaching, and professional practice; and images of teacher  
11 learning and teachers’ roles in educational change. To clarify these three  
knowledge–practice relationships we use the following terms: *formal knowl-*  
13 *edge*, *practical knowledge*, and *transformative knowledge*, respectively (see  
Table 1), in order to discuss our findings later in this chapter. We identify  
15 frequently cited examples of each knowledge–practice relationship, such as  
personal practical knowledge and pedagogical content knowledge, and  
17 record Images of Teacher Knowledge and Images of Teaching to see the  
differences in these images across the three perspectives.

19

### *Formal Knowledge*

21 The first relationship of knowledge and practice, or knowledge-for-practice,  
as conceptualized by Cochran-Smith and Lytle (1999a), sees accomplished  
23 teachers are those who learn a body of knowledge and apply it in their  
teaching. A formal knowledge base characterizes this relationship (McDiar-  
25 mid, Ball, & Anderson, 1989; Sikula, 1996; Wilson, Shulman, & Richert,  
1987). Sometimes the term “best practices” is used and is based on empirical  
27 evidence of effectiveness and used by professional content area groups  
(Zemelman, Daniels, & Hyde, 1999). The novice-expert literature provides  
29 one construct example. Here studies contrast the differences between new  
and experienced teachers in the context of actual teaching (Borko, Bellamy,  
31 & Sanders, 1992). Novice-expert studies draw upon the research on expertise  
(Bereiter & Scardemalia, 1993) and characterize how teachers think, solve  
33 problems, and develop knowledge structures and how this development  
occurs over time (Berliner, 1988). One way to extract this thinking is to talk  
35 with experts as they solve problems. However, extracting the complexity of  
teaching out of teacher talk has been difficult and is not easily achieved  
37 (McIntyre & Hagger, 1993).

Another construct that has had a major impact on teacher knowledge is  
39 the pedagogical content knowledge (Shulman, 1986) that teachers’ need not  
only to know the subjects they teach, but how one appropriately teaches this

1 **Table 1.** Comparing Constructs across Images of Teacher Knowledge  
and Practice.

Construct	Images of Teacher Knowledge	Images of Teaching
<i>Formal knowledge</i>		
Novice-expert (Bereiter & Scardemalia, 1993; Berliner, 1988)	Research-based findings Teaching models	Apprentice Modeling teaching Problem-solver Potential
Pedagogical content knowledge (Shulman, 1986)	Forms of representations Forms of knowledge Concepts Curricular materials Research-based findings	Codification, Handbooks Best practices
<i>Practical knowledge</i>		
Personal practical knowledge (Elbaz, 1983, 1991)	Non-propositional, holistic, tacit, emotional, continuously under revision	Rules of practice, practical principles and images
Wisdom of practice (Shulman, 1987)	Pedagogical knowledge and reasoning	Definitions, descriptions, and reproductions of good teaching
Craft knowledge (Grimmett & MacKinnon, 1992)	Pedagogical learner knowledge	Sensible know-how Moral and critique
Personal practical knowledge (Clandinin, 1986)	Experience and reflection Classroom situations	Decision-maker Knowledge-melder Dilemmas
Knowing-in-action (Schön, 1983)	Consider-reconsider Professional practicum Action-artistry	Coach Assisted performance
<i>Transformative knowledge</i>		
Self and School Context (Bullough & Gitlin, 1995)	Personal theories, voice, and school policies	Personal, group, and school stories
Teacher Research (Cochran-Smith & Lytle, 1999b)	Systematic inquiry into teaching Critiquing teaching, curriculum Democratic schooling and social justice	Collaborative, community, relationships Talk, and critique Change agent

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39 content. Categories of pedagogical content knowledge include useful representations of ideas, demonstrations, and examples. Other forms include knowledge of the different ways that learners learn this content and the

1 range of conceptions and experiences students have with the content. A  
body of knowledge now exists that documents student misconceptions in  
3 key content areas, such as mathematics, science, reading, and writing (Ball,  
1993; Bruer, 1993). Both pedagogical content knowledge and the wisdom of  
5 practice from Shulman (1987), straddle the formal knowledge perspective  
and the practical knowledge perspective, as both benefit from the findings  
7 from research as well as the experiences of teaching.

### 9 *Practical Knowledge*

The second relationship of knowledge and practice, or knowledge-in-prac-  
11 tice, is intertwined and is not based on applying a formal body of knowledge  
as suggested in the previous relationship. Here, practical knowledge consists  
13 of what teachers know based on their teaching experience (Fenstermacher,  
1994). Knowledge is developed from teaching and reflection. Shulman  
15 (2004) viewed teaching as more complex than medicine, and he made his  
case by comparing the wisdom of practice in medicine and teaching. He  
17 characterized the wisdom of practice in medicine as a physician's compe-  
tence in problem formulation and hypothesis generation, as well as an ex-  
19 tensive knowledge base. The complexity of teaching, meanwhile, consists of  
many students, numerous goals, multiple constituencies, and continual un-  
21 predictability. The challenge for teachers, according to Shulman (2004), is to  
address this complexity with a limited amount of time and energy.

23 Craft knowledge is another construct that blends with Shulman's wisdom  
of practice. The notion that teaching consists of human sensibilities, such as  
25 judgment and empathy, rather than a knowledge of rules. Grimmett and  
MacKinnon (1992) characterized craft knowledge as "teachers' judgment in  
27 apprehending the events of practice from their own perspectives..." (p. 387).  
Related to craft knowledge is the notion of personal practical knowledge, as  
29 exemplified by Elbaz's (1983) study of one high school English teacher and  
Clandinin's (1986) study of three elementary teachers. Each of these studies  
31 revealed the complexity of knowledge in practice as explicated in the teach-  
ers' images and their personal metaphors and later on the value of teachers'  
33 narratives (Connolly & Clandinin, 1990). The ideas of reflectivity on teach-  
ing and during teaching (Schön, 1983) have had considerable influence on  
35 teacher knowledge and how to develop this knowledge in teacher education  
programs.

37

### *Transformative Knowledge*

39 The third relationship of knowledge practice, or knowledge-of-practice, we  
have labeled as transformative knowledge, based on its overarching function

1 of teachers critiquing schools in the areas of curriculum, teacher autonomy,  
2 democratic schooling, and social justice. Such critiques are the focus for  
3 action research involving systematic inquiry into teaching and the contexts  
4 of teaching (Carr & Kemmis, 1986). The goal here is the raising of questions  
5 and the discussion by practitioners of issues facing them and their students.  
6 The improvement of teacher practice can also be furthered by action re-  
7 search in which the findings help the teacher and teacher communities gain  
8 an understanding of learning outcomes, learner differences, teaching strat-  
9 egies, and appropriate assessment and instructional technology (Cochran-  
10 Smith & Lytle, 1999a, b).

11 Another construct is the transformation of one's self and identity, as  
12 discussed by Bullough and Gitlin (1995), which includes school histories,  
13 personal metaphors, shadow studies, and ethnographies. The focus of  
14 transformative knowledge is an ongoing self-study of teacher identity in the  
15 context of teaching and schools. Cochran-Smith and Lytle (1999a) cite this  
16 outcome as an "expanded view of practice" and awareness of the respon-  
17 sibility of being a teacher within a community, sometimes organized in  
18 teacher study groups or networks. Included in these methodologies are the  
19 use of teacher "talk" and the collaborative development of teacher knowl-  
20 edge within sustained conversations and commitments.

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### *Visualizing Teaching*

27 Our use of graphical representations continues the inquiry into teacher  
28 knowledge by using teachers' models of ID as a lens to reveal their views of  
29 teaching. Teacher beliefs and teacher knowledge may be synonymous  
30 (Kagan, 1990), particularly for new teachers. This connection can be seen in  
31 the idea of teacher knowledge construed as personal practical knowledge  
32 (Richardson, 1996), although there have been attempts at distinguishing  
33 between beliefs and knowledge (Nespor, 1987).

34 Graphical representations of teacher knowledge and teaching can take  
35 many forms, including models, images, and metaphors. Models provide an  
36 important tool for representing reasoning and physical processes, and at-  
37 tempts have been made to model the learner (Bruner, 1985) and the teacher  
38 (Berliner, 1986). The value of models, images, and metaphors is that they  
39 assist the teacher in articulating the teachers' world, rather attempting to  
40 formulate this world in terms of rules and propositions.

## 1 *Models*

3 Bruner (1985) surveys several models of the learner. The tabula rasa model  
5 begins with a person's mind as a blank slate that records and accumulates  
7 experience. Another model characterizes the learner as a hypothesis gener-  
9 ator and asserts the value of a good theory. Yet another family of models  
11 are those in which humans use their minds to make sense of clutter and  
13 organize their experience. A constructivist model of the learner proposes  
15 stages in which growth is achieved through assimilating experience and ac-  
17 commodating the rules to experience. The novice-expert model of the learner  
19 favors any means by which one can move from knowing nothing about a  
21 particular domain to knowing a great deal. Such learning is accomplished by  
23 asking and modeling an expert and developing greater competence along  
25 some continuum of stages. Bruner insists that a model of the learner is  
27 necessary to improve the state of education, but he also argued that this  
29 model must vary to fit the nature of the learning task, the learning outcome,  
31 and learning situation itself. Having a variety of models, says Bruner, is a  
33 virtue because that choice of how to conceive learners is ultimately more  
35 helpful than proposing that one script fits all.

19 Berliner's (1986) model of the teacher provides a review of the novice-  
21 expert approach as applied to teachers. He cites the value of such an ap-  
23 proach as a starting point with novice teachers and that teaching expertise  
25 provides exemplary performances for newcomers to model. He argues that  
27 attempting to understand what makes a master teacher can be helpful for  
29 orienting cooperating teachers as they assist new teachers. Another value in  
31 studying expert teachers, according to Berliner, is that competence is valued  
33 by society and can influence educational policy. Specifically, Berliner iden-  
35 tifies the necessity for expert teachers to possess subject matter knowledge  
37 and knowledge of organization and management of classrooms. Requiring  
39 both sets of knowledge, says Berliner, distinguishes teachers from other  
fields. Berliner (1988) adopts the model of human expertise of Dreyfus and  
Dreyfus (1986) to characterize the development of teacher expertise across  
five stages. At the novice stage, new teachers seek out rules, recipes, and  
strategies to guide their actions. At the advanced beginner stage, the teacher  
uses contextual experience to clarify the use of rules and strategies. The third  
stage involves competence where the teacher makes conscious actions and  
reflects on these actions. The fourth stage is proficiency where intuition and  
experience guides decisions. Finally, in the fifth stage of expertise a teacher's  
thinking and actions are automatic and fluid, and the teacher is fully com-  
fortable and in control of the classroom.

1 *Images*

3 Images are a broad category, but include any visual device, physical or  
5 mental, that creates a representation of views of teaching. A variety of work  
7 on teacher knowledge has used images to explore teacher knowledge. Cal-  
9 derhead (1996) summarizes the use of simulations, think-aloud commen-  
11 taries, teacher narratives, ethnography and case studies, concept mapping,  
13 metaphors, and repertory grids to study these visuals. This variety of tech-  
15 niques is necessary, according to Calderhead, to analyze teachers' work.  
17 Calderhead and Robson (1991) documented images of preservice teachers  
who imagined what teaching would be like, influenced partly by their own  
experiences (e.g., experiences with teachers, testing, relatives who were  
teachers). In his case study of a first-year teacher, Bullough (1989) noted the  
evolving images as mother figure, disciplinarian, reaching out, instructional  
leader, and professional. From his work using images of teaching, Kortha-  
gen (1993) reports that they can be resistant to change and encourage the  
use of these visual presentations of classrooms for teachers' self-examination  
of their teaching.

19

*Metaphors*

21 A type of image is the metaphor which people use to frame their experiences.  
23 Teachers' talk frequently consists of metaphors such as the flow of lessons or  
25 regarding students as "my kids" (Munby, 1986). Clandinin (1986) reported  
27 on the images or metaphors of elementary teachers, including "language is  
29 the key," and the classroom as the home. Bullough (1991) documents sev-  
31 eral case studies in which teachers used metaphors to explain their teaching.  
33 Bullough and Gitlin's (1995) chapter on personal metaphors profiled three  
35 teachers and their respective metaphors of bridge builder, guide, and expert.  
Teacher self-study groups may cite personal metaphors to report the dis-  
cussions of their work. For example, one such group (Miller, East, Fit-  
zgerald, Heston, & Veenstra, 2002) identified their best teaching in  
metaphors of a kaleidoscope, soil, Afghan construction, band conductor,  
and Yoda from the Star Wars movies. Metaphors allowed these teachers to  
encapsulate their views of teaching in ways that could be more easily talked  
about in shared professional stories.

37

39



1 priateness of decisions that determine learning outcomes, teaching, and as-  
3 sessment (Shambaugh & Magliaro, 2006). The visual connections between  
5 the components in these ID models imply an alignment of learning, teach-  
7 ing, and assessment decisions, as well as guidance on working through the  
9 decision-making process. Thus, ID's systematic features keep learning issues  
11 in the forefront as teachers design, teach, and evaluate their intervention  
13 efforts (Smith & Ragan, 2005).

15 ID models provide visual representations of this complex intellectual and  
17 problem-solving process (Nelson, Magliaro, & Sherman, 1988). Some mod-  
19 els advocate a step-by-step approach to help newcomers learn ID (Dick et  
21 al., 2005), while others "may be quite dynamic, recursive and never-ending"  
23 (Gustafson & Branch, 1997, p. 74) depending on their use (e.g., Morrison,  
25 Ross, & Kemp, 2004). Attempts to develop ID models for teachers have  
focused on, how to more closely approximate teacher tasks (e.g., Gerlach &  
Ely, 1980; the ASSURE model from Smaldino, Russell, Heinich, & Mo-  
lenda, 2005; Reiser & Dick, 1997). However, due to the very individualistic  
and personal nature of planning and teaching, the complexity of classrooms,  
and the multiple influences affecting their practice (Kennedy, 1994), as well  
as demands made on their time, it has proven difficult for teachers to adhere  
to these systematic processes in their daily practice. Models are persuasive  
because they provide ready-made approach to follow, but teachers have  
resisted these goal-directed approaches, possibly because they may not  
match teachers' beliefs about their abilities to influence student learning  
(Martin & Clemente, 1990).

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### *Instructional Design for Accountability*

27 Teachers tend to resist any process or innovation that appears to them as  
29 overly prescriptive and ill-suited to address changing classroom conditions  
(Snelbecker, 1988). Despite this resistance, ID can be connected to teacher  
31 education through the Interstate New Teacher Assessment and Support  
33 Consortium (INTASC) standards and the National Board core principles.  
35 The INTASC model core standards are meant to apply to teachers in *all*  
37 teaching regardless of content area or expertise. The standards "embody the  
39 kinds of knowledge, skills, and dispositions that teachers need to practice  
responsibly when they enter teaching and that prepare them for eventual  
success as National Board-certified teachers (National Board for Profes-  
sional Teaching Standards) later in their career" (Council of Chief State  
School Officers, 1992). For example, Principle 3 of the INTASC standards  
addresses the need for teachers to understand how to teach diverse learners.  
In ID, one of the functions of a needs assessment in ID is to learn about

1 one's students. Principle 4 encourages teachers to use a variety of instructional strategies, another decision-point in most ID processes. Principle 9  
3 advocates teachers to develop reflective practitioner habits that continually evaluate the effects of their choices and actions on others. The use of ID has  
5 the potential to help teachers to systematically reflect on how one develops "a learning environment that encourages positive social interaction, active  
7 engagement in learning, and self-motivation," which is INTASC Principle 5.

9 National Board Certification provides another connection between teaching and ID. The National Board for Professional Teaching Standards was  
11 created in 1987 to acknowledge professional teachers. Teachers submit performance-demonstrating materials to be judged against the Board's certification standards. All certifications are based on several core principles, one  
13 which advocates that "Teachers systematically think about their classroom practice and learn from experience" (National Board for Professional  
15 Teaching Standards, 2004).

17 In our teaching of ID we frame it as a means to help teachers become better teachers through systematic development, teaching, and reflection. Our conceptual image of the teacher is that of a reflective practitioner (Clark  
19 & Yinger, 1987; Schön, 1983). While ID can be regarded as a construct of developing formal teacher knowledge, ID as framed by us provides a tool to acknowledge practical knowledge and also provides a way to systematically  
21 review this personal knowledge, craft knowledge, and knowing-in-action. However, for ID to be effective for teachers, ID instruction must take into account the world of teachers. Branch (1994) provides conditions for ID to  
23 be considered by teachers:  
25

- 27 • The goal for instruction should be to facilitate learner achievement as determined by the learner and the culture, which will influence the learner.
- 29 • People involved in the learning process should understand the complex relationships within instruction so as to support each other.
- 31 • ID is an appropriate response to the complexities of instruction.
- 33 • ID practices may be applicable at different levels of application and contexts.
- 35 • Teacher input should be included in the development of an ID model.

37 Our strategy in ID instruction for teachers is to ask them to develop their own ID models. ID is best known for its models on how instruction *should*  
39 be developed. We believe that people can learn from these models, but what may be more productive in the long run is to encourage teachers to develop their own representations. In our view ID provides teachers with one tool to  
(a) develop instruction, (b) operationalize a reflective orientation, and (c)

1 evaluate one's teaching (Shambaugh & Magliaro, 2001). Teachers need to be  
2 able to instantiate their own design processes in order for their personal  
3 reflection and professional growth. Despite concerns over their "drawing"  
4 ability and a limited understanding of the formal field of ID, students, many  
5 of whom have been or who were teachers, have developed a wide variety of  
6 visual representations of the ID process in our ID courses over the past 10  
7 years. How these teachers represented their views of teaching in these mod-  
8 els is the main focus of our inquiry in this chapter.

## 11 METHODOLOGY

### 13 *Methodological Approaches*

15 Categorization and metaphor are human achievements that are difficult to  
16 study. Experimental studies can easily be confounded by the influence of  
17 other aspects of the human person, such as perception. Another research  
18 approach is empirical modeling in which human observations and actions  
19 are mathematically recorded, and regression is used to identify the input-  
20 output relationships. Such an approach is useful when very narrow expertise  
21 is required and when equations used to model teaching seem untrustworthy.  
22 A third approach is the use of analytical modeling in which human per-  
23 formance is compared to performance data. The goal is to minimize the  
24 differences between what humans do and what they should do based on an  
25 agreed-upon mental model. Of course, this approach assumes that the  
26 mental model of teachers could be agreed upon.

27 A more useful approach has been the use of "think-alouds" to record  
28 what people say about what they do as they perform the task (Ericsson &  
29 Simon, 1993). The basis for Strauss and Shilony's (1994) study of teachers'  
30 models of children's minds was based on how teachers speak about in-  
31 struction. Limitations include that what is reported is distorted and biased  
32 partly on the person's inability to verbalize how one is thinking as well as  
33 responding to the needs of the researcher. Teacher talk frequently includes  
34 the use of metaphors that characterize how teachers think about teaching  
35 (Munby, 1986). For example, teachers frequently use the word "flow" be-  
36 tween activities or between lessons suggesting some form of motion. In our  
37 study, teachers identified many metaphors that were meant to denote an ID  
38 process but also, we believe, identified their views of teaching, of students,  
39 and their educational role. Verbal and written reports, according to Rouse  
and Morris (1986), may be useful in generating research questions for sub-

1 sequent study. The use of interviews and surveys are often used after the  
2 task has been completed to study individual judgments and decisions (Go-  
3 uld & White, 1974).

5

### *Participants and Settings*

7

8 A total of 190 models from 13 deliveries of a master's level ID course were  
9 collected from 1994 to 2001. Of this corpus of data, 123 ID models from  
10 students who were self-identified preservice or practicing teachers, or teach-  
11 ers who were transitioning into administration or educational support per-  
12 sonnel, were culled for this study. The authors of this paper have taught this  
13 course, either as co-instructors or in ongoing collaboration at two institu-  
14 tions, since 1994. As a result of this collaboration, the instructional ap-  
15 proach and course sequence described below were applied fairly equally  
16 across all courses taught. All 13 deliveries were taught at the master's level at  
17 two doctoral-granting, land-grant institutions.

### *The ID Course and Instructional Approach*

18 Our reflexive teaching approach views instructor and student as co-partic-  
19 ipatory, meaning that although instructors and students have different roles,  
20 all participants can learn from each other (see Shambaugh & Magliaro,  
21 1997, 2001 for a detailed description of this teaching approach). Through  
22 constant feedback, instructors and students design and serve as formative  
23 evaluators in a supportive and collegial way using in-class peer and out-of-  
24 class verbal and written feedback. Rather than depicting ID as a complex  
25 algorithm, rules, or procedures, which could not cover all contingencies of  
26 human learning and classroom realities, we advocate that teachers consider  
27 a range of possibilities that might responsively address the learning needs of  
28 their students (Shambaugh & Magliaro, 1997). We engage them in tasks in  
29 which they use ID components and processes, reflect on their appropriate-  
30 ness, and revise their draft projects based on this reflection and our feed-  
31 back.  
32

### *The ID Model Task*

33 The ID course content consists of four general units: Getting Started,  
34 Analysis, Designing, and Evaluation (Shambaugh & Magliaro, 1997, 2001).  
35 The three latter units correspond with the conventional components con-  
36 sidered in general ID instruction (e.g., needs assessment, goal/objective set-  
37 ting, assessment, instructional strategies, media, etc.). However, the  
38

1 “Getting Started” component is when the students begin to instantiate their  
held beliefs and procedures for learning and instruction by identifying key  
3 learning principles that support their teaching philosophy and their own ID  
model. And, while the course itself has evolved over the years, this task for  
5 students to develop personal ID models that would transfer to their own use  
has remained consistent.

7 The actual assignment occurs across the entire semester. At the beginning  
of the semester, students are asked to represent their own preliminary design  
9 or planning process. This task serves two purposes: (1) to honor their  
present conceptions of the ID process, and (2) to provide a tangible rep-  
11 resentation of a tacit process, such as their current planning processes, that  
could be examined in a more open manner. The specific directions are:

13 *Depict on paper your own model for designing/planning instruction. A model is usually*  
15 *a visual representation – a picture, but you can be creative and try other approaches. The*  
17 *model should represent the important aspects of developing instruction and the rela-*  
*tionships of these aspects to each other. Write a brief narrative explaining the model in*  
19 *terms of the important components of your model and the relationships between com-*  
*ponents.*

21 As the initial prompt, we share widely used ID models that they would find  
in textbooks including Dick et al. (2005); Gagné, Wager, Golas, and Keller  
23 (2005); Gerlach and Ely (1980); the ASSURE model from Smaldino et al.  
(2005); Morrison, et al. (2004); the Rapid Prototyping model from Tripp  
25 and Bichelmeyer (1990); the United States Air Force model (1975); and the  
Layers of Necessity model from Wedman and Tessmer (1990). We then  
27 engage them in a group activity in which they characterize the components  
and processes of their lesson planning, and invite them to think about how  
29 they would represent this process visually, via metaphor or some alternate  
representation to a novice.

31 This preliminary ID Model and narrative are shared in the class.  
Throughout the semester, students are asked to compare conventional  
33 components and points of consideration with their own models. At the end  
of the semester, we give students the same set of directions and ask them to  
35 revise their models and the narratives that explain the various components,  
relationships among components, and design thinking processes that make  
37 the model usable in their own teaching practice.

*Data Sources and Analysis*

Our initial plans were to code just the type of mental model that each teacher constructed in order to articulate his/her representation for ID. However, during the analysis process we discovered that the teachers also indirectly shared with us their own views of teaching within this same representation. The data included 123 final ID models and narratives that the teachers submitted at the end of the semester (i.e., their “final” personal ID models). Teachers were identified by responses they made on profile cards distributed at the beginning of each course. Two copies of each model and narrative were made so that we could code the types of models separately using a category system derived inductively through reviewing the models and reading the literature on mental models (e.g., Gentner & Stevens, 1983; John-Steiner, 1997; Mayer, 1989). A recursive process of categorization and theme building was used (Spradley, 1980). Discussion and consensus building were used to create the categories. We then recoded all models for types of models again according to our finalized coding system. At this point we achieved 97% agreement on the categories. Again, we reviewed the specific models where there was disagreement and came to consensus. The category system for types of models is as follows:

- *Artifact*: a concrete object; e.g., a pyramid, a tea cup.
- *Components*: an abstract representation with components connected; e.g., intersecting rings, concentric circles.
- *Human activity*: a human thinking process or action; e.g., problem solving, creativity, reading.
- *Organic*: a natural or nature-related process; e.g., the waves of an ocean, a growing tree or flower, a rainbow.
- *Flow chart*: a traditional representation of boxes and arrows to depict component and direction of activity.

To analyze the models for views of teaching, we again followed our earlier process. We reviewed the models looking for patterns of similarity, and we read the literature on views of teaching (e.g., Berliner & Calfee, 1996; Bransford, Brown, & Cocking, 1999; Edmonds et al., 1994; Richardson, 2001). The resultant category system was based on synthesis of perspectives from the ID literature and the literature on teaching and teacher education.

- *Designer-centered*: the teacher maintained a stance of being outside the actual teaching of the product; i.e., creating the instructional event, but not having to implement it.

- 1 • *Learner-centered*: learners were identified as central to the model, and the primacy of learners was upheld in the narrative.
- 3 • *Teacher-centered*: explicit representation of teacher issues and the primacy of the teacher (and for the teacher) to make the decisions about design decisions and the enacted instruction.
- 5 • *Co-centered*: the interactions between the teacher and the students were central in the design and implementation decision-making, a more negotiated process. Models that also included the designer were categorized here.
- 7 • *De-centered*: the educational context drove the decision-making and implementation (e.g., expectations of parents, other teachers, principals, state learning standards, federal mandates).

13  
15 In both category systems defined above, the categories within each system were not mutually exclusive. That is, models sometimes depicted characteristics of two or more categories. For coding, models were labeled based on the primary or predominant features instantiated in the model. Frequency counts for each set of categories were conducted. A descriptive analysis of those counts was conducted.

## 23 25 FINDINGS

27 Our findings are organized into two sections: types of models and views of teaching.

31 **Table 2.** Frequency Counts for Types of Models.

33 Type of Model	Frequency (% of total)
35 Human activity	51 (42)
Components	23 (19)
37 Artifacts	20 (16)
Organic	15 (12)
Flow charts	14 (11)
39 Total	123

*Types of Models*

1  
3 As stated earlier, types of models were coded into five categories: human  
5 activity, components, artifacts, organic artifact, and flow charts (see Ta-  
7 ble 2). Out of the 123 models, 51 (42%) were categorized as human activity.  
9 Examples of human activity included playing basketball, training for run-  
11 ning events, climbing stairs, designing a garden, hiking, juggling, kayaking,  
13 living in a neighborhood, solving problems, directing a stage play, swim-  
15 ming, and traveling. Teachers identified human activities, which they un-  
derstood in order to represent ID components. For example, one teacher  
used a baseball diamond to arrange the various components in the order  
that a batter would run the bases after hitting the ball. Another teacher used  
juggling to represent ID, where the designer is the juggler and the various ID  
considerations are the objects to be juggled. To further drive the point home  
visually, the teacher drew the juggler on a balancing board while trying to  
keep all of the components in the air.

17 Twenty-three (19%) of the models were categorized under the compo-  
19 nents category. Components were defined as any abstract representation  
21 including shapes, such as circles and rings, and ways of connecting these  
23 shapes, such as concentric circles. Teachers included a range of different  
25 components, often specific to their contexts, to illuminate their ID process.  
27 Component examples included circles, iconic shapes, layers, levels, musical  
29 notes, stages, and webs. Models in this category depicted the ID process  
with the various components organized into some abstract shape or set of  
shapes that were clearly interactive, with the ID process itself seen as a  
recursive intellectual activity. Many of these models fit Gustafson and  
Branch's (1997) notion of a curvilinear composition that characterizes the  
way that ID is typically practiced. The students still tended to use arrows to  
depict the relationships between the model components, but often those  
arrows were bi-directional. Sometimes, these models included components  
that were visually overlapping to illustrate the connections between the ID  
considerations. Typical words in the accompanying narrative included "cy-  
33 cle," "interaction," "creative," and "recursive." Overall, teachers using  
35 components depicted ID holistically and fluid with no particular component  
37 taking precedence at all times. Compared with human activity models, in  
which the metaphoric activity provided the basis for representation, compo-  
nent models conceptually represented ID components similar to pub-  
39 lished ID models, but attempted to improve the flow chart representation of  
boxes and arrows with shapes more appropriate to their sense of the ID

1 process. For example, the nesting of circles within circles communicated an  
interrelationship between ID activities.

3 Twenty (16%) of the models were determined to be specific artifacts,  
concrete symbols that held significance for the teachers. Examples of these  
5 models included a bread machine, bridge, clock, cue ball, playground slide,  
pyramid, quilt, school building, speedway, train track, and umbrella. Here,  
7 the teachers used a metaphoric object to suggest what ID was, but the  
supporting features provided minimal guidance for how ID should be con-  
9 ducted.

Fifteen (12%) were organic with 8 of the 15 being either trees or flowers.  
11 Other models included fish-eating-knowledge, heart, rainbow, tributary, and  
waves.

13 Fourteen models (11%) were flow charts. Sometimes, the components  
were connected by arrows and/or lines in an ordered sequence. Similar to  
15 the Gustafson and Branch's (1997) characterization of a "rectilinear row of  
boxes," these models depicted a clear order of operations. Some of the  
17 models in this group featured branching and/or operations that were to be  
considered simultaneously. Another feature of models in this group was a  
19 hierarchy of activity. The teacher visually organized the steps so the intent  
was clear and certain steps were more important and required more atten-  
21 tion, time, and effort than others. The words students used in the supporting  
narrative helped us to classify models into this category. Words such as  
23 "systematic," "orderly," "input," "output," and "linear" were character-  
istic of the descriptors used in the narratives accompanying these models.  
25 We found this to be quite interesting given that, in the literature, the pre-  
dominant representation for the ID process is a flow chart. While the flow  
27 chart makes historical sense given the ID field, and it can transcend a range  
of audiences because it is intended to be context-free, we found it interesting  
29 that given the option, teachers preferred to use other representations for  
articulating a process that was meaningful for them.

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33

### *Views of Teaching*

35 Based on our category system, 87 of the 123 ID models (71%) revealed a  
view of teaching other than that of an instructional designer (i.e., a person  
37 not intimately connected with the enactment of the instructional event).  
That is, designer-centered ID models, which in many respects represent the  
39 focus of the course, accounted for 36 models (29%). Teacher-centered ID  
models accounted for 47 models (38%). Co-centered ID models accounted

**Table 3.** Frequency Counts for Views of Teaching.

Type of Model	Frequency (% of Total)
Teacher-centered	47 (38)
Designer-centered	36 (29)
Co-centered	18 (15)
Learner-centered	16 (13)
De-centered	6 (5)
Total	123

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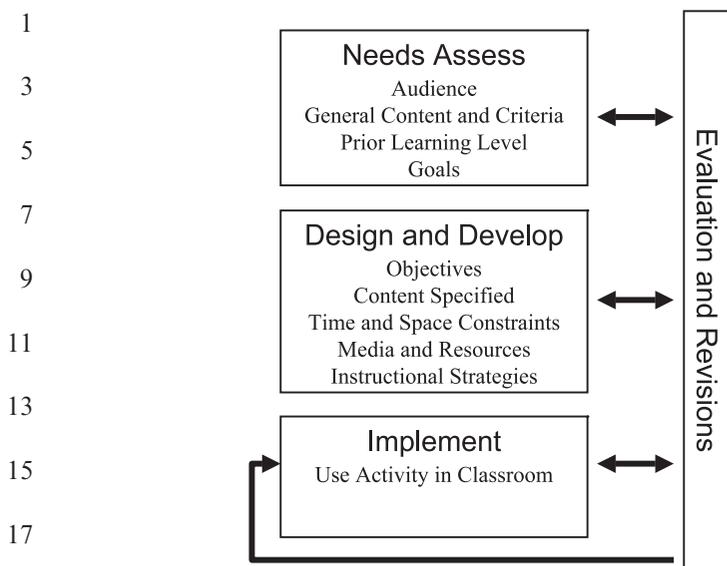
13 for 18 models (15%). Learner-centered views of teaching accounted for 16  
 15 models (13%). De-centered ID models accounted for six models (5%) (see  
 Table 3).

17 *Designer-Centered ID Models*

19 The purpose of the ID model task was to have teachers represent their own  
 21 ID process, so one would have expected to see ID models closely approx-  
 23 imate our sequence or one of the conventional models we introduced to  
 25 students. However, this was not the case in that only 29% of the models  
 followed a conventional ID flow-chart approach (see Fig. 1). The features  
 common to ID models, including the traditional components of analysis,  
 design, development, implementation, and evaluation (i.e., the so-called  
 ADDIE model of ID) were only found in these representations.

27 *Teacher-Centered ID Model*

29 The largest number ( $n = 48$ ; 39%) of models representing this view of  
 31 teaching were classified in this category. Teacher-centered views of teaching  
 in students' ID models directly represented the ID process in a way that  
 33 made sense for them and used a metaphor that frequently resonated with  
 their personal interests, such as cooking, sailing, reading, or gardening.  
 35 Other examples of teacher-centered views included a creative spiral, a set of  
 questions, tour guide, fast food preparer, problem solver, base runner, kite  
 37 handler, and garden designer. In Fig. 2, a "continuous" view of teaching  
 was depicted in the student's ID model. The student's narrative discussed  
 three aspects of instruction design, which also denoted this teacher's routine.  
 39 The first aspect is being knowledgeable about the subject matter, which  
 enables the teacher to be flexible and creative and to adapt to different  
 learning styles. A second aspect of the model is to set goals and objectives



19 *Fig. 1. Designer-Centered ID Model.*

21

23 for each lesson, which “often generate from the [state] standards of learning.” A third aspect seen in the model was evaluation, and “as teachers, we need to know what works and what does not work. One way of doing this is by reflecting on what we do as a teacher in order to make our curriculum better. Better teachers make better students.”

27

29 *Co-Centered ID Models*

31 Co-centered ID models ( $n = 17$ ; 14%) included a mix of participants in the design process, including teacher–student, teacher–designer, teacher–student–designer, and designer–student. Reciprocity and collaboration are key themes in these models. In the example shown in Fig. 3, the student wrote that “collaboration through social interaction and positive communication builds a positive working environment among people,” and that the purpose of the model is to provide a comfortable working environment. The wavy line represents all of these interpersonal skills needed to create an atmosphere of support,” while “the outer circle represents a strong connection that bonds the three groups together.” Participants in this model include administration, faculty, and staff, and the arrows denote close ties between

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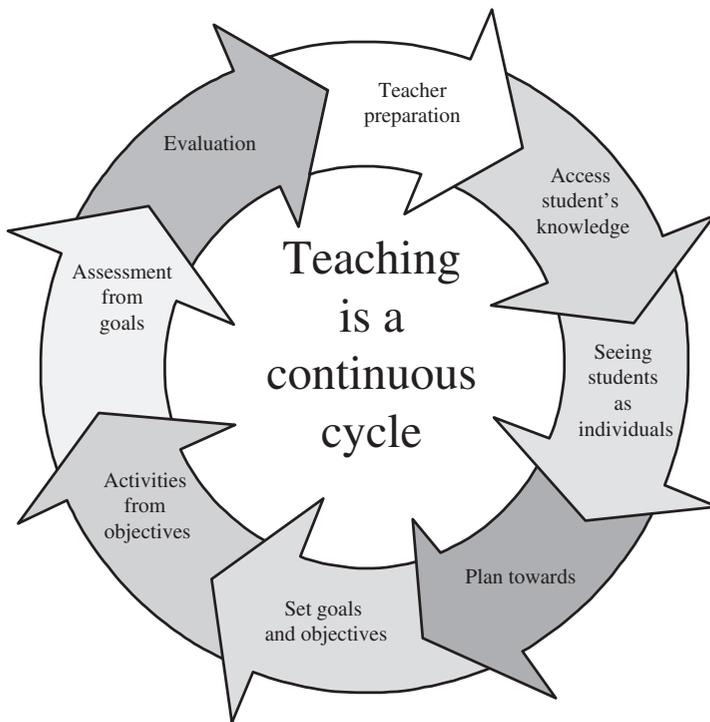


Fig. 2. Teacher-Centered ID Model.

each group. The process of collaboration begins with a mission and supporting goals. Although not represented in the visual, the student's narrative stated that an assessment of participants' needs determines learner and environmental characteristics. In turn, these characteristics influence the choice of an instructional framework. An evaluation to determine learner achievement and program effectiveness was also specified.

*Learner-Centered ID Models*

Learner-centered views of teaching ( $n = 16$ ; 13%) represented learners as the principal focus of design efforts and included numerous learner-orientation metaphors, such as a tea cup, inviting atmosphere, hurdler, experiences, well-being, climbing a playground slide, and a school building. In one example (see Fig. 4), the student viewed ID as a swimming child – a “holistic

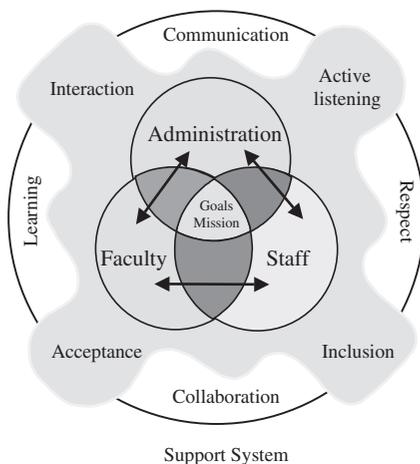


Fig. 3. Co-Centered ID Model.

student-centered approach. All of the pieces of ID work to keep the student afloat.” She did not see a linear approach to the ID process, preferring to consider each student and each situation individually. Her point was that in order to meet student needs, she had to maintain a flexibility, yet a synergy, among the various issues she wanted to consider in her daily planning. Her role as teacher and designer was to ensure that everything flowed.

#### *De-Centered ID Models*

“De-centered” characterized models ( $n = 6$ ; 5%) revealed a dependence on client needs, institutional requirements, or state-imposed standards. In this category teachers were seen as a cue ball who “sink the right balls,” a dart thrower who attempted to hit the “state standards” bulls-eye, a juggler, a railroad train on a track, and “driving through the neighborhood” (attempting to drive a straight line or shortest distance). An example of this reactive view of teaching from a special education teacher (see Fig. 5) has arrows pointing to two different ways, “which is how I see the balancing act that I have to perform on a daily basis.” The arrows pointing to the left indicate demands she has no formal control over, such as curriculum, state standards, and individualized educational plans (IEP). The arrows pointing to the right, meanwhile, represent items she has some control over, such as finding and addressing students’ strengths and weaknesses, interests, and selection of instructional materials. In the model and narrative she describes

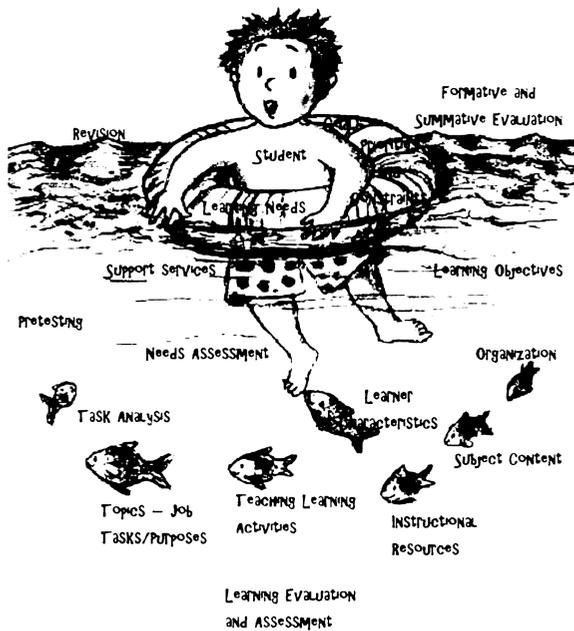


Fig. 4. Learner-Centered ID Model.

herself: "I am at the *bottom* (emphasis ours) of the model. I chose the juggler because I see myself juggling the weight of certain combinations of these demands on a daily basis."

## LEARNING FROM THE TEACHERS' PERSPECTIVE

### *What Questions about Teaching Guided the Research?*

Our primary aim in this research was to see how teachers' personal models of ID also revealed their views of teaching. Originally, the research was based on a cognitive psychology, in terms of the veracity of teachers' ID models in representing the ID process and how students were representing ID components and connections between components. Analyzing these models for "views of teaching" signaled an additional direction in our inquiry to better understand teachers.



Fig. 5. De-Centered ID Model.

*How and Why Were the Questions and Perspectives Chosen?*

Our teaching of ID advocates its use as a systematic tool to develop instruction. Over 10 years of writing about ID pedagogy we have come to believe that a parallel attribute for ID is its capacity to help teachers examine their teaching. However, teacher use of ID has been minimal owing to several factors, including an unawareness of ID, the time demands of ID, and the inability of one ID model to address teachers' individual needs. We chose to look more closely at the ID models of our students, many of whom were teachers, to better understand teachers and make adjustments in our teaching. These teaching adjustments involved our representation of the ID process and a better understanding of the contextual issues facing teachers.

1 *What was Learned about Teaching, Teacher Thinking, Teacher Education,*  
 3 *or Learning to Teach?*

5 The ID model task helped us to envision how ID can (a) contribute to  
 7 teacher knowledge and expertise, and (b) understand individual teachers  
 and their role in the educational process.

9 *Teacher Knowledge and Expertise*

11 The different perspectives of teacher knowledge were categorized at the  
 13 beginning of this chapter as formal knowledge, practical knowledge, and  
 15 transformative knowledge. These categories match and were meant to clar-  
 17 ify Cochran-Smith and Lytle's (1999a) labels of knowledge-for-practice,  
 knowledge-in-practice, and knowledge-of-practice. To summarize, formal  
 knowledge is that knowledge base used to develop competent teachers, while  
 practical knowledge instantiates teachers in teaching, and transformative  
 knowledge helps teachers to assume a more critical role within the context of  
 schools.

19 The value of ID is that the process, whether it is used or not for its  
 21 original purpose, the development of instruction, becomes in a larger sense,  
 23 a lens by which an explanation of teachers' formal knowledge, practical  
 knowledge, and transformative knowledge are possible (see Fig. 6). ID, as  
 framed for teachers as systematic decision-making (Shambaugh & Magli-  
 aro, 2006), helps teachers to make clear decisions on learning outcomes,

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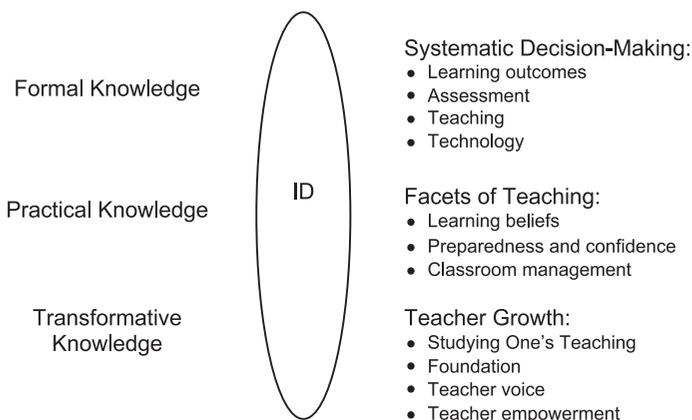


Fig. 6. Instructional Design as a Lens for Teacher Knowledge.

1 assessment, teaching, and technology. This systematic decision-making con-  
2 tributes to the development of formal knowledge in teachers; namely, a  
3 process for unpacking the complicated situation of the classroom. Here,  
4 needs assessment, a traditional component of ID, becomes another question  
5 for teachers, which can be made more relevant to their circumstances by  
6 asking the question: *What do I know about the classroom?* Such a question  
7 implies learning more about student differences, as well as content knowl-  
8 edge and pedagogical content knowledge, and an ecological understanding  
9 of the context of the classroom, school, school district, state, and federal  
10 priorities.

11 Reframed in this fashion, systematic decision-making in teachers connects  
12 to the development of practical knowledge and a greater understanding of  
13 the facets of teaching, including classroom management, learning beliefs,  
14 preparedness and confidence, and reflection. ID activities, including the ID  
15 model task, prompt teachers to confront and make explicit their views on  
16 teaching. ID's systematic features provide the teacher with a process to  
17 study and document one's teaching, a feature of transformative knowledge.  
18 At the same time ID provides a foundation to ground a teacher's devel-  
19 opment as a teacher in a blend of personal practical knowledge (e.g., learner  
20 differences at specific grade levels, school context, and state standards) and  
21 a personalized knowledge base (e.g., teaching models and strategies, learn-  
22 ing theory, and subject matter understanding). Finally, such activities as  
23 studying one's teaching and building a personal foundation for teaching  
24 contributes to the development of teacher voice (Hargreaves, 1996), and a  
25 greater sense of having a personal say in curriculum and schools.

26 In a larger sense, the ID model task helped to remind us that the de-  
27 velopment of teacher expertise can be viewed as both (a) cognitive knowl-  
28 edge and (b) personal sensibilities and agency. As teachers' decision-making  
29 skills can be characterized as novice, then by progressively more skilled  
30 categories (e.g., Dreyfus & Dreyfus, 1986), they develop a developmental  
31 awareness of the human sensibilities necessary to assist learner needs, but  
32 also the development and awareness of their personal role, empowerment,  
33 and teacher voice in the educational system.

### 34 *Individual Teacher Knowledge*

35 The two research questions in this study asked how these models could be  
36 categorized in terms of model types and views of teaching. The different  
37 types of models (i.e., artifact, components, human activity, organic, and  
38 flow chart) revealed artificial representations of teachers' models of ID, but  
39 which served to identify the tacit knowledge of individual teachers. It is

1 unlikely that teachers (or any other newcomer to the process) could actually  
2 use their ID models to analyze, design, and evaluate instruction. However,  
3 these model types helped us to see how teachers see the process; for example,  
4 whether they viewed ID as a technical process or as a human activity. These  
5 model types were frequently characterized by a predominant metaphor. The  
6 metaphor would likely prove inadequate to actually conduct ID, but the  
7 metaphor does signal how ID initially makes sense to a teacher and provides  
8 an individualized learning path to assist that teacher in actually using ID.  
9 Analyzing the models for different views of teaching helped us to see teachers'  
10 stances towards practice, such as their decision-making and their agency  
11 in teaching. Further inquiry on our part could study how metaphors might  
12 help us to see into the inner thought processes of designers and teachers  
13 (Coyne, 1995). The role of metaphor in communication and understanding  
14 has been acknowledged by linguists and philosophers, but has resisted formal  
15 approaches to characterize it as meaningful (Fauconnier & Turner, 2002).

16 The teachers did succeed in depicting their models in terms of identifying  
17 the ID components important to them and visualizing the relationships  
18 between these components. However, the tacit knowledge that guides teacher  
19 decision-making and actions was not yet articulated in these representations.  
20 Procedures for using the models were not always clearly explained in the  
21 narratives accompanying each model, particularly for the non-designer-centered  
22 models. Teachers' actual understanding of these relationships was not always  
23 evident in either the visual or the narrative.

24 The words used to describe the models were unique. Many teachers explored  
25 all of the nuances of the metaphor and how its various features fit their  
26 understanding of ID. The narratives varied in elaboration from a very  
27 superficial set of connections between the metaphor and the ID process to  
28 very detailed explanations. While no systematic analysis of why these  
29 descriptions varied was conducted, anecdotal evidence indicated variations  
30 were due to the degree to which the individual engaged in the ID model task  
31 in a more creative and playful manner, and the degree to which the individual  
32 was familiar with the metaphor.  
33

34

#### *What were the Strengths and Limitations of the Methodological Approach?*

35

36 One limitation with this study is the possible favoring of our representations  
37 of ID; that is, either our definition of ID with an emphasis on addressing the  
38 human side of ID and/or the ID model that we used to represent the course  
39

1 flow and curriculum (Shambaugh & Magliaro, 1997). The teachers' versions  
were quite different from ours. Although they may have valued the inclusion  
3 of our model's components, the components appeared in a unique fashion in  
each model. A second limitation was relying on the visual and written nar-  
5 rative for our interpretation of the models and assignment of categories  
without checking our interpretation and category matching with the teach-  
7 ers themselves. A third limitation of this research, and perhaps the most  
serious, was not describing in more detail the personal and professional  
9 contexts in which the participants led their lives. Students were categorized  
as teachers based on the simple distinctions outlined earlier. More detail  
11 about their contexts would be helpful in future work as it is these contexts  
that give rise to teacher voices (Hargreaves, 1996), and only partial repre-  
13 sentations of these voices may be depicted in these models.

The development of a category system proved challenging, as we imme-  
15 diately realized the difficulties of developing a limited number of categories  
to adequately label model types or views of teaching. It is necessary, how-  
17 ever, that when faced with this challenge researchers must start somewhere.  
Views of teaching are based on many experiences, including formal edu-  
19 cation, professional development, and actual classroom experience. It would  
be interesting to trace back from these representations the history of these  
21 teachers to better understand the numerous influences that gave rise to the  
models. One of the lessons we learned from analyzing these models is that  
23 we must do more work to document the histories of the teachers to gain a  
better understanding of the graphical views of teaching. In addition to em-  
25 ploying a Learner Profile to help students in the ID course document what  
they know about their learners, we could prompt a more detailed Teacher  
27 Profile, which could include this contextual history. Within these histories  
one would likely note the various individual ways that teacher knowledge  
29 developed. It would be interesting to see how these histories provide some  
insight into the different ways that teacher knowledge has been character-  
31 ized. We have conducted one case study comparing novice and expert  
teachers from a course (Shambaugh & Magliaro, 1996), but continuing such  
33 a study post-course would be valuable to see to what extent the course  
experience changed their teaching. Another next step would be to conduct a  
35 study analyzing the impact of the course on the students/teachers who have  
taken this course.

37

39



1 ways that are meaningful to them. Their ID models are context-specific and  
draw upon many examples of teaching experiences to solve a novel problem.  
3 Second, students gain a better understanding of our representation of the  
process to be learned. For most ID courses, this is the primary learning  
5 outcome. However, mastering a model of a complex process such as ID is  
not possible in a one-semester course. To use ID well requires that one have  
7 an extensive knowledge base across many situations and perhaps a reper-  
toire of design thinking, which has not been well articulated, although the  
9 ID field has been moving toward the adoption of competencies. Students in  
the course do not have the knowledge and experience to use ID, despite their  
11 rich repertoire of practical knowledge. We have learned in this course that  
students may be experiencing difficulties in applying this knowledge to bear  
13 at the same time learning a new conceptual approach to designing responses  
to learning needs.

15 As a pedagogical feature in our teaching, the personal ID model task was  
structured to encourage students to represent their own model of ID com-  
17 ponents, rather than having one imposed on them. In our examination of  
personal ID models, especially those constructed by teachers, we noticed  
19 that we also learned about teachers' representations of their views of teach-  
ing. That is, personalized ID models, particularly for teachers, more closely  
21 "modeled" the individual teacher's thinking (Elbaz, 1983), although they  
did not completely tell the story of their design thinking. And, while an-  
23 ecdotally the teachers reported that the models did afford them the oppor-  
tunity to articulate the range of considerations for planning, and to help  
25 them better align their goals, instruction, assessment and so forth, at this  
point in their self-reflection, they had not developed the language or rep-  
27 resentation to fully investigate their work. The ID model task has surprised  
us in that an activity sometimes depicted as an overly prescriptive approach  
29 to instructional development, provided us with a lens on how teachers  
viewed teaching. The resulting images and narrative could be thought of as  
31 what happens when we look through a kaleidoscope and each turn of the  
wrist produces a different image. What one sees in terms of the facets of  
33 teaching, then, depends on who is viewing and what one values and believes.

35

37

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